Small Business Innovation Research/Small Business Tech Transfer

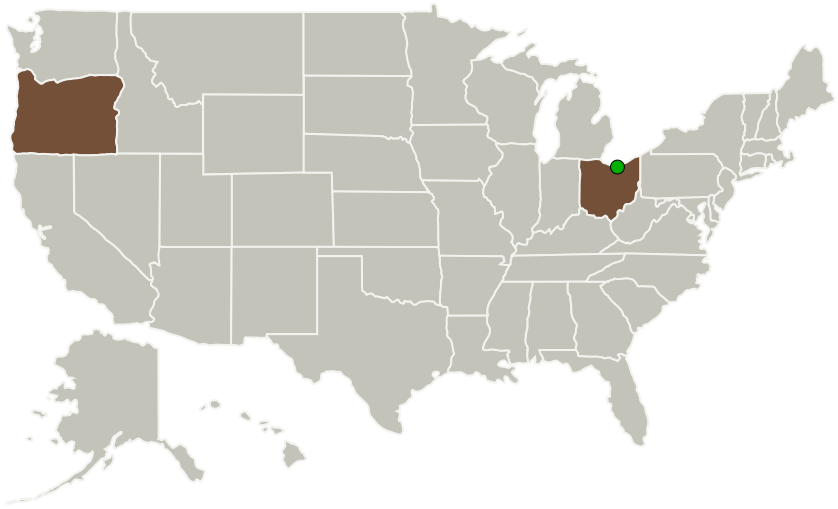
Regenerable Carbon Filter, Phase I

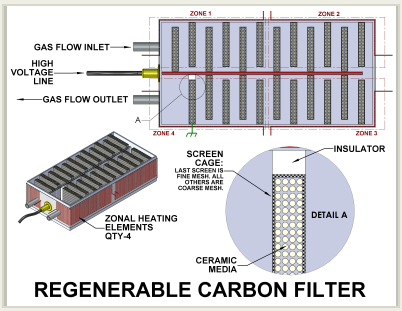
Completed Technology Project (2017 - 2017)

Project Introduction

A Regenerable Carbon Filter (RCF) is proposed for the removal of carbonaceous particulate matter produced in Environmental Control and Life Support (ECLS) processes. Successful development of this technology will result in a device that effectively collects ultrafine carbon particles in a high density, high storage capacity volume which is subsequently regenerated in-situ using self-cleaning techniques. Various reactors considered for use in air revitalization in NASA's exploration life support closed habitat mission concepts result in the generation of solid carbon compounds as byproducts. These include the Carbon Formation Reactor (CFR) within a Bosch-type carbon dioxide reduction system and, what the proposed RCF technology specifically addresses, the methane Plasma Pyrolysis Assembly (PPA) within a Sabatier-type carbon dioxide reduction system. Capture and disposal of this carbon material in a manner that eliminates crew handling while maximizing equipment operating capacity and lifetime is of paramount importance within manned space habitats that rely upon these processes.

Primary U.S. Work Locations and Key Partners





Regenerable Carbon Filter, Phase I Briefing Chart Image

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

UMPQUA Research Company

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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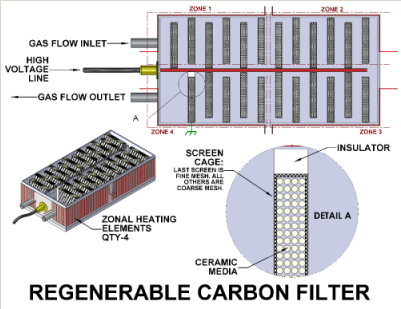
Organizations Performing Work	Role	Type	Location
UMPQUA Research Company	Lead Organization	Industry	Myrtle Creek, Oregon
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Ohio	Oregon

Images



Briefing Chart Image
Regenerable Carbon Filter, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/136322)*

Project Management

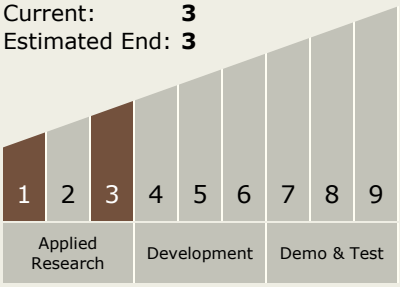
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Richard Wheeler

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.1 Atmosphere Revitalization